

Work Order ID 155361***155361***

Page 1

Thursday, January 12, 2017 3:40:53 PM

Item ID: D4737-044 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Bracket Assembly
Start Date: 1/13/2017 Start Qty: 8.00 ***8*** Cust Item ID:
Required Date: 1/17/2017 Req'd Qty: 8.00 ***8*** Customer:
Reference:

Approvals: Process Plan: DAS 21 9-89 Date: JAN 13 2017 Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D4737	REV A								
100	BAND SAW	0.00							DAS 33 9-89 17/01/17
100									
Bandsaw	Memo	0.00							
Jeaspa Bandsaw	Cut blanks: (1.500" x 2.250") 5.8" long								
110	HAAS CNC VERTICAL MACHINING #1	0.00							DAS 33 9-89 17/01/18
110									
HAAS 1	Memo	2.12							
HAAS CNC vertical machine #1	Mill as per dwg d4737 FOLIO FB 157								
	Folio rev: <u>AP</u>								
	Dwg Rev: <u>A</u>								
	2-deburr								
	3-Scribe as per dwg								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
☐ OTHER : _____					

155361

Thursday, January 12, 2017 3:40:53 PM

N900040100

Setup Start *NS1*

Stop *NS2*

8

Cust Item ID:

Start Date: 1/13/2017 **Start Qty:** 8.00

Required Date: 1/17/2017 Req'd Qty: 8.00

8

Customer:

Reference:

Run Start *NR1*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop ***NR2***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

**Insp.
Stamp**

120

OC

Memo

0.01

Quality Control

DAS
33
9-89

17/01/18

130

QC

Memo

0.03

Quality Control

DAS
44
9-89

17-01-20

0.00

140

Small Fab

Memo

0.09

Small Fab

Assemble D4737-044 as per Dwg

DAS
36
9-89

17/01/23

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step #: _____		QTY Effective : _____			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
							Completed By		
							Lead hand / Supervisor Approval Verification		
							QC / QA Coordinator Approval		
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
OTHER : _____									

Work Order ID 155361

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155361

Page 3

Item ID: D4737-044 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Bracket Assembly
Start Date: 1/13/2017 Start Qty: 8.00 ***8*** Cust Item ID:
Required Date: 1/17/2017 Req'd Qty: 8.00 ***8*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	QC5- Inspect part completeness to step on W/O	0.00							
150									
QC	Memo	0.03							
Quality Control									
160	Identify as per dwg & Stock Location: <u>31122</u>	0.00							
160									
Packaging	Memo	0.01							
Packaging									
170	QC21- Final Inspection - Work Order Release	0.00							
170									
QC	Memo	0.13							
Quality Control									


JAN 24 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause			FAULT CATEGORY							
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence
Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____						
Misidentified	☐	Past Due	☐							

Picklist Print

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Page 1

Work Order ID: 155361

155361

Parent Item: D4737-044

D4737-044

Parent Item Name: Bracket Assembly

Start Date: 1/13/2017

Required Date: 1/17/2017

Start Qty: 8.00

Required Qty: 8.00

Comments: IPP REV:A NEW ISSUE 12-12-03 JLM VERIFIED BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D3121-21

Manufactured

No

Each

44.0000

16

D3121-21

Bolt

Location

Loc Qty

Loc Code

ST018

44

150132

44

16

D3183-045

Manufactured

No

Each

18.0000

16

D3183-045

Bearing Assembly

Location

Loc Qty

Loc Code

FG

4

139821

2

141815

2

ST021

14

151519

4

153613

10

M174B1.500X02.250

Purchased

No

f

11.5696

4.210526

M174B1.500X02.250

17-4 SS Bar 1.50 X2.250

Location

Loc Qty

Loc Code

MAT010

11.569616

m113568

1.0833

m133511

0.416

m135690

10.070316

3,908

17/01/23 DAS 36 9-89

17/01/23 DAS 36 9-89

B155637 (uax)

DAS 33 9-89

17/01/17

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

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Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

DART AEROSPACE LTD		Work Order: 155361
Description: Bracket		Part Number: D4737-4
Inspection Dwg: D4737	Rev: A	Page 1 of 1

INSPECTION SHEET

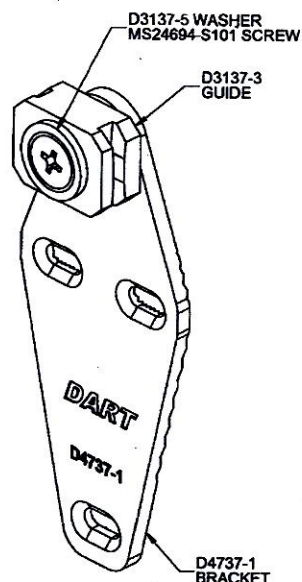
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.182	+/-0.010	0.183	✓		MJP-04	vern
5.64	+/-0.030	5.647	✓		...	...
5.349	+/-0.010	5.353	✓		31004	Height gauge
0.365	+/-0.010	0.364	✓		MJP-04	vern
2.465	+/-0.010	2.464	✓			
0.336	+/-0.010	0.335	✓			
1.012	+/-0.010	1.018	✓			
0.786	+/-0.010	0.786	✓			
R0.19	+/-0.030	0.190	✓			
Ø0.392	+0.006/-0.001	0.3933	✓		MJP-01	Mic
Ø0.392	+0.006/-0.001	0.3933	✓		...	...
4.267	+/-0.010	4.274	✓		MJP-04	vern
Ø0.159	+0.005/-0.001	0.163	✓			
Ø0.201 x 0.100 DP	+/-0.010	0.192 x 0.100	✓			
4.36	+/-0.030	4.366	✓			
0.162	+/-0.010	0.162	✓			
0.162	+/-0.010	0.168	✓			
0.868	+/-0.010	0.868	✓			
0.76	+/-0.030	0.750	✓			
2.79	+/-0.030	2.790	✓			
1.94	+/-0.030	1.939	✓			
0.100	+/-0.010	0.100	✓			
0.070	+/-0.010	0.070	✓			
0.182	+/-0.010	0.182	✓			
0.200	+/-0.010	0.200	✓			
0.235	+/-0.010	0.236	✓			
0.075	+/-0.010	0.080	✓			
100°	+/-0.05°	0.100°				
0.032	+/-0.010	0.032	DAS		ML-05	Dial depth Mic

Measured by: 33	Checked by: 44	QC Inspector:
Date: 17-01-18	Date: 17-01-20	Date:

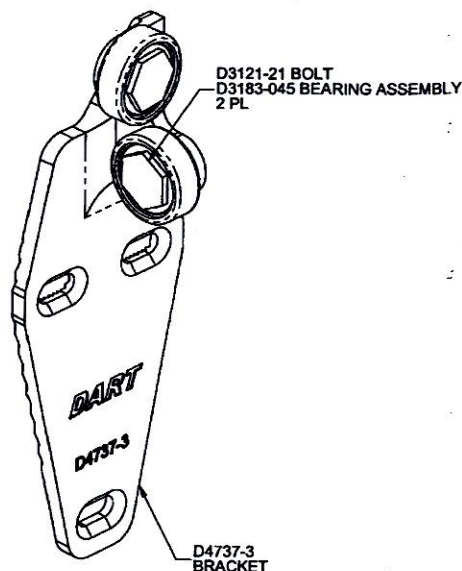
Engineering Approval: (If necessary)	Date:
--	--------------

Rev	Date	Change	Revised by	Approved
A	15.02.26	New Issue	KJ	

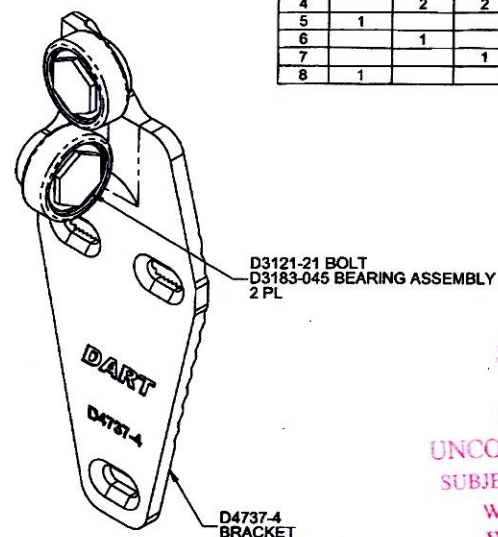
8 7 6 5 4 3 2 1



D4737-041 BRACKET ASSEMBLY



D4737-043 BRACKET ASSEMBLY



D4737-044 BRACKET ASSEMBLY

ITEM	QTY -041	QTY -043	QTY -044	P/N	DESCRIPTION
	X			D4737-041	BRACKET ASSEMBLY
		X		D4737-043	BRACKET ASSEMBLY
			X	D4737-044	BRACKET ASSEMBLY
1		2	2	D3121-21	BOLT
2	1			D3137-3	GUIDE
3	1			D3137-5	WASHER
4		2	2	D3183-045	BEARING ASSEMBLY
5	1			D4737-1	BRACKET
6		1		D4737-3	BRACKET
7			1	D4737-4	BRACKET
8	1			MS24694-S101	SCREW

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

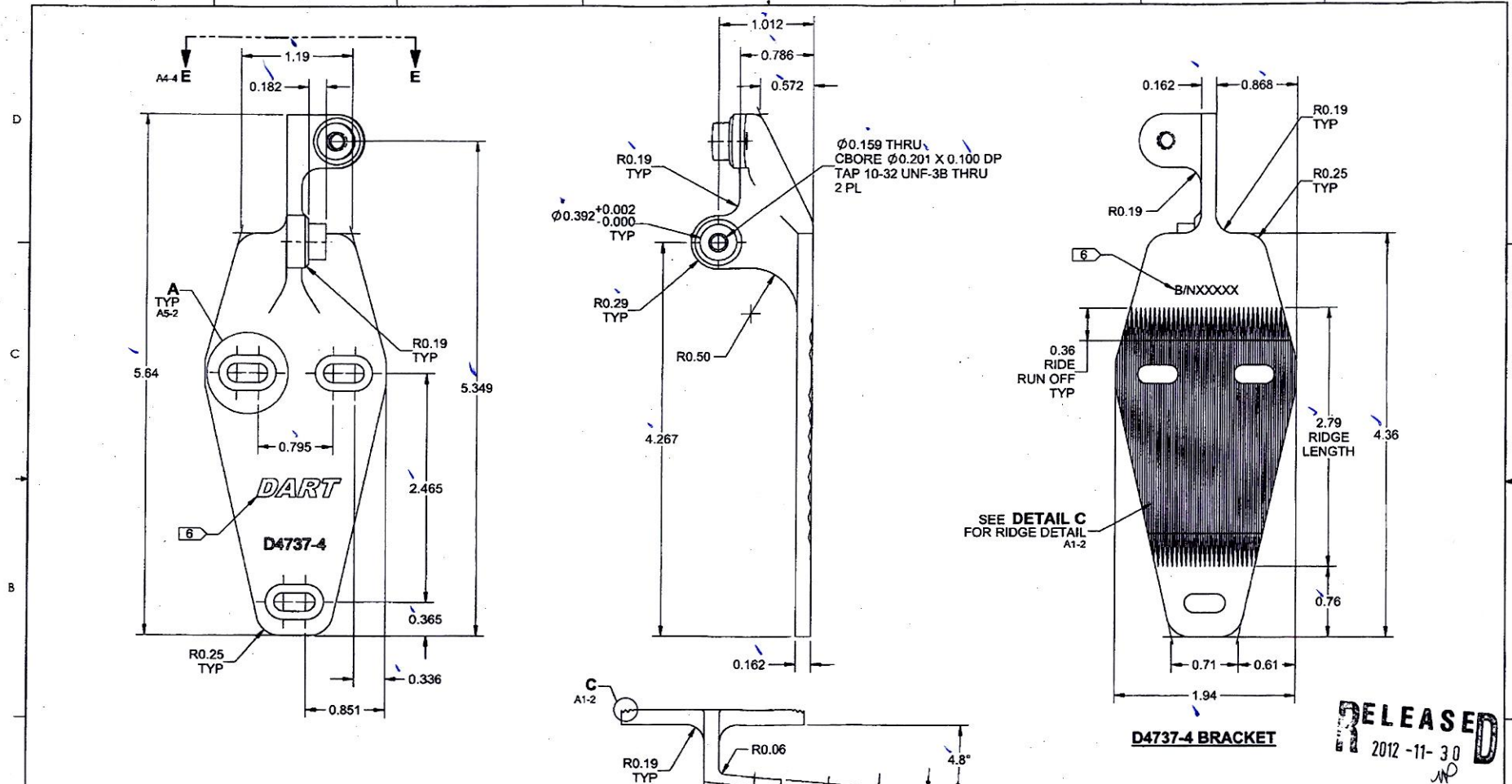
NO. 155361 MLCJ
1701-13

RELEASED
2012-11-30
MP

- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: N/A
 - 7) WEIGHT:
 - D4737-041 = 0.29 lbs
 - D4737-043/-044 = 0.36 lbs

A	NEW ISSUE	DESCRIPTION	MB	12.11.12
REV.			BY	DATE
DESIGN		DART AEROSPACE LTD		
DRAWN		HAWKESBURY, ONTARIO, CANADA		
CHECKED		DRAWING NO.		REV. A
MFG. APPR.		D4737		SHEET 1 OF 4
APPROVED		TITLE		SCALE
DE APPR.		BRACKET ASSEMBLY		NTS
DATE	12.11.12	COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		

8 7 6 5 4 3 2 1



- NOTES:
- 1) MATERIAL: 17-4 PH STAINLESS STEEL PER AMS 5604 OR 5643
MIN YIELD TENSILE = 100 ksi, MIN ULTIMATE TENSILE = 150 ksi
PER DART SPEC. M17-4-B
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.015 MAX
 - 6) IDENTIFICATION: ENGRAVE DART LOGO USING 0.20 HIGH LETTERS & P/N
USING 0.15 HIGH LETTERS TO A MAX. DEPTH OF 0.010
SCRIBE WITH DART B/N USING VIBRATING STYLUS
 - 7) WEIGHT: SEE ASSEMBLED WEIGHT ON SHEET 1

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D4737	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		BRACKET ASSEMBLY	NTS
DATE	12.11.12	COPYRIGHT © 2012 BY DART AEROSPACE LTD	
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2012-11-30
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